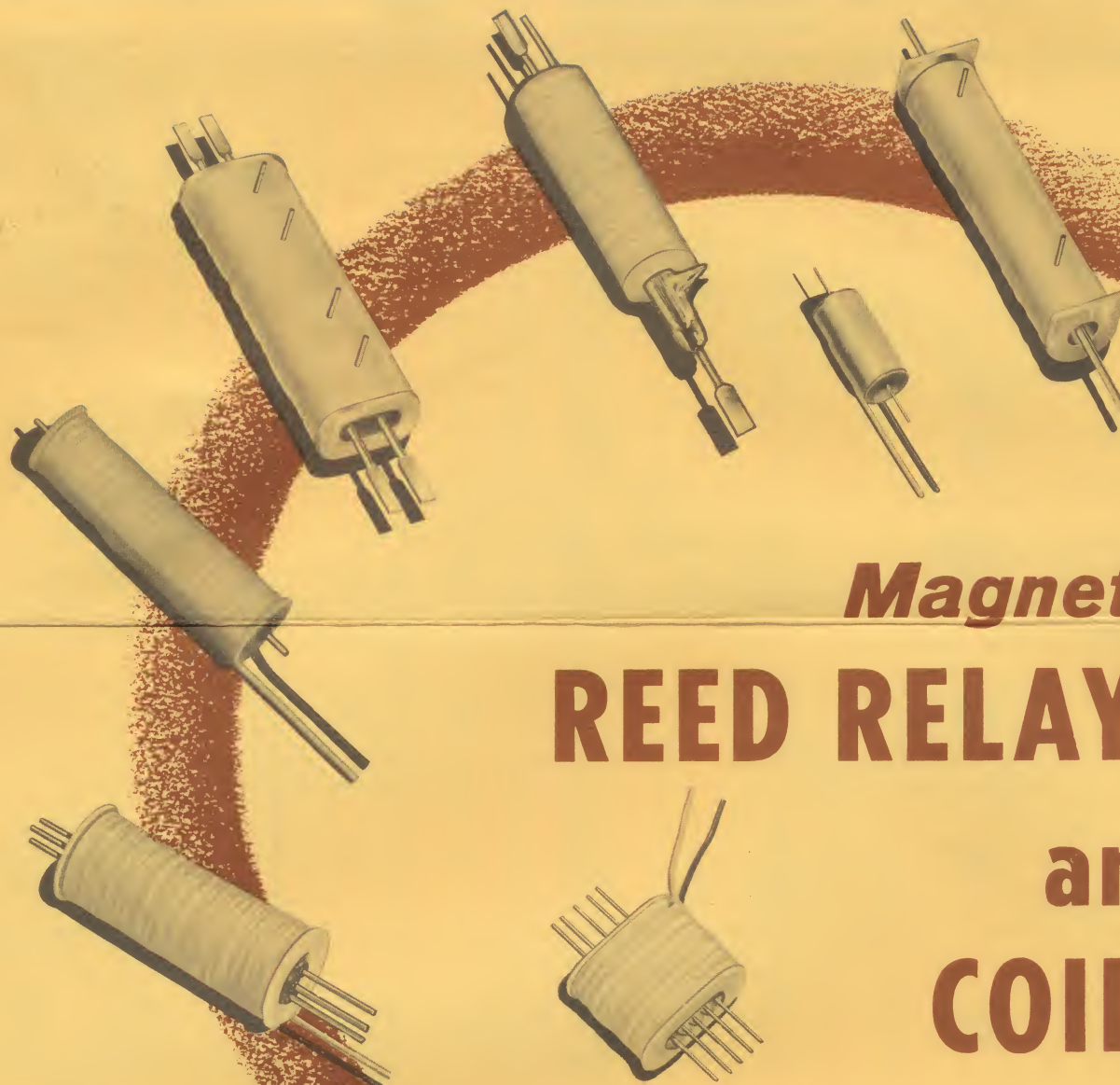




Magnetic **REED RELAYS** and **COILS**

Several years ago COTO-COIL pioneered in designing and supplying the electronic industry with coils to operate the new popular reed switch. COTO-COIL now offers a complete line of basic reed relays to meet the stringent requirements of sophisticated switching circuitry. Specifications

are outlined on the following two pages.

To help answer the many questions that arise in the selection and application of reed relays, we are presenting a brief summary covering the technical aspects of reed switches and coils on the back page of this folder.

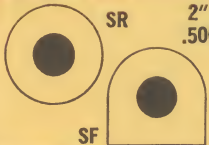
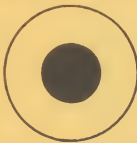
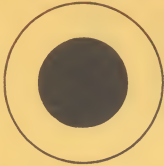
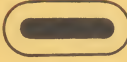


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BASIC REED RELAYS

REED COILS							REEDS (See Chart At Right)		
SIZE (End drawings actual size)	CAT. NO. TYPE VOLTS	TURNS	WIRE SIZE	RESISTANCE OHMS (Nominal)	AMP./TURNS (Nominal)	MILLIWATTS (Nominal)	NUMBER REEDS	REED FIG.	CONTACT FORMS †
 2" lg x .562" OD	S 6 12 24 32 48	4000 7700 13500 15000 24000	34 37 40 41 43	105 360 1400 1930 5150	250	400	1 1 1	3 or 4 5 6	1 A 1 C 1 C or 1 D
 SR 2" lg x .500" OD SF	SR 6 12 24 32 48	4200 8200 15000 18000 24000	34 37 40 42 44	113 450 1650 2840 5890	200	330	1 1 1	3 or 4 5 6	1 A 1 C 1 C or 1 D
 1.450" lg x .470" OD	SP 6 12 24 32 48	3800 7300 15000 18750 30000	36 39 42 43 45	150 600 2400 4000 9200	150	250	1 1	3 or 7 5 or 6	1 A 1 C
 1.187" lg x .700" OD	SA 6 12 24 32 48	2300 4500 8500 12000 17000	33 36 39 40 42	65 255 965 1810 3660	200	575	1 1	8 9	1 C 1 C or 1 D
 2" lg x .500" x .720" OS	SD 6 12 24 32 48	3000 5700 11000 14000 24000	33 36 39 40 42	90 335 1290 2165 5700	200	430	2 2 2	3 or 4 3 & 5 6	2 A 1 A & 1 C 2 C or 2 D
 2" lg x .843" OD	M 6 12 24 32 48	2100 4000 9000 12400 17000	31 34 37 38 40	50 175 820 1400 3120	250	700	3 3 3 3 3	3 or 4 5 6 3 & 5 3 & 5	3 A 3 C 3 C or 3 D 2 A & 1 C 1 A & 2 C
 .800" lg x .375" OD	U 6 12 24 32 48	3200 6300 12600 17000 25000	38 41 44 45 47	150 600 2500 4000 8600	125	240	1	1 or 2	1 A
 .800" lg x .500" x .375" OS	UD 6 12 24 32 48	2100 4250 8100 10500 19000	36 39 42 43 45	86 350 1320 2250 6000	125	400	2 3 2 2 2	2 1 1 1 1	2 A 3 A 2 B ★ 1 A & 1 B ★ 1 C ★
 .712" lg x .687" x .275" OS	UV 6 12 24 32 48	1750 3500 7000 9000 14000	37 40 43 44 46	115 490 1900 3100 7600	90	300	5 5 5 4 4	1 1 1 1 1	5 A 4 A & 1 B ★ 3 A & 2 B ★ 4 B ★ 2 C ★
 .690" lg x .875" x .500" OS	T 6 12 24 32 48	2200 4200 8000 11000 14800	35 38 41 42 44	100 400 1600 2800 5800	125	350	4 3 3 3 3 6 5 4 4 4 3 5 5	2 2 2 2 2 1 1 1 1 1 1 1 1	4 A 1 A & 2 B ★ 1 B & 1 C ★ 2 A & 1 B ★ 1 A & 1 C ★ 6 A 5 A 3 A & 1 B ★ 2 A & 1 C ★ 2 A & 2 B or 2 C ★ 3 B ★ 4 A & 1 B ★ 1 A & 2 C ★

† Contact arrangement possible with various switches and coils.

★ Bias Magnet Required

Quotation on complete relays on request.

REED SWITCHES

REED FIG.	MINIATURE		STANDARD					JUMBO	
	1	2	3	4	5	6	7	8	9
	.095"	.125"	.220"					.320"	
	A	A	A	A	C	C, D	A	C	C, D
	B	B	B	B	—	Bistable	B	—	—
CONTACT FORM with Bias Magnet									
MOUNTING POSIT.	Any (Dry)	Any (Dry)	Any (Dry)	Any (Dry)	Any (Dry)	Vert. to 30° (Hg Wet)	Any (Dry)	Any (Dry)	Vert. to 30° (Hg Wet)

CAT. NO.	VOLTS	1-9	10-24	25-99	100-249
S SR SF SA	6	\$1.50	\$1.27	\$1.12	\$.97
	12	1.65	1.40	1.27	1.07
	24	1.80	1.53	1.35	1.17
	32	2.40	2.04	1.80	1.56
	48	3.00	2.55	2.25	1.95
SP	6	1.30	1.20	1.05	.95
	12	1.50	1.35	1.20	1.10
	24	1.75	1.60	1.45	1.25
	32	2.00	1.80	1.65	1.45
	48	2.65	2.40	2.20	1.95
SD	6	1.70	1.45	1.28	1.10
	12	1.90	1.60	1.45	1.25
	24	2.10	1.80	1.60	1.40
	32	2.55	2.20	1.95	1.70
	48	3.20	2.75	2.40	2.10
M	6	1.60	1.36	1.20	1.04
	12	1.70	1.45	1.27	1.10
	24	2.00	1.70	1.50	1.30
	32	2.65	2.25	2.00	1.70
	48	3.00	2.55	2.25	1.95
U	6	1.20	1.02	.90	.78
	12	1.30	1.10	.97	.85
	24	1.70	1.45	1.27	1.10
	32	2.10	1.78	1.57	1.36
	48	4.00	3.40	3.00	2.60
UD	6	1.35	1.15	1.05	.90
	12	1.45	1.25	1.10	.95
	24	1.80	1.60	1.35	1.20
	32	2.05	1.75	1.52	1.30
	48	2.85	2.40	2.15	1.85
UV	6	1.28	1.10	.97	.83
	12	1.30	1.12	1.00	.86
	24	1.70	1.45	1.28	1.12
	32	2.00	1.60	1.42	1.22
	48	2.80	2.38	2.10	1.82
T	6	1.05	.89	.79	.68
	12	1.15	.98	.86	.75
	24	1.30	1.10	.97	.85
	32	1.45	1.23	1.09	.94
	48	1.85	1.57	1.39	1.20

PRICES COILS ONLY

Prices for larger quantities upon request

PRICES are for coils with 3" lead. Add \$3.00/C for P/C Pin Termination.

TO ORDER: Specify coil type by LETTER plus VOLTAGE desired for flexible leads (example SF-12, UV-32). For printed circuit pins add suffix P (example: SD-12-P, T-6-P).

SUMMARY OF MAGNETIC REED SWITCHES AND RELAYS

A basic Magnetic Reed Relay in its simplest form is a single pole, normally open reed switch, surrounded by a small electromagnetic coil suitable to the control circuit. The reed switch is a glass capsule, best classified in size as miniature, standard and jumbo and containing two permeable reeds in a nitrogen atmosphere.

Maximum contact parameters including special types range up to 50W, 15A inrush and 5000V capabilities.

When the drive coil is energized, the reeds snap closed. Coil actuation is limited to low ripple current DC, but AC control voltage may be used in conjunction with a small diode and filter capacitor. Depending on type, reeds will follow alternating current coil input or DC pulses up to 400 cps, provided the 'on' time does not exceed 50%.

The reed relay offers extreme reliability, high speed, small volume and low cost as compared to the more familiar but cumbersome mechanical relay. Switching speeds between .5 and 2 milliseconds can be expected, which includes coil rise time. This speed, falling between solid state devices and the relatively slow mechanical relay, opens broad fields of application. Its moderate power handling capabilities for millions of cycles is suitable for all but heavy power switching.

COTO-COIL has a stock coil in five voltage ranges to fit all reed switches available at this time.

Reed coils are rated in ampere turns to provide an approximate guide line in choosing reed sensitivity. 50% to 100% overdrive is advisable to assure fast closure under all conditions. In general, it will be found that COTO REED COILS will close a given reed at a lower AT than even factory 'standard' coils, due to the close proximity and density of the winding. The listed coil voltages are only typical values, and most coils may be operated continuously at 60% over-voltage. Coordination of coil impedance, flux (ampere turns) and reed sensitivity becomes increasingly important as coil power or pulse width is reduced. Where drive power is limited to low values, such as solid state or photo cell output, the proper choice of coil and reed produce power gains of 500 or more with ease. As

an example, a COTO U-32 coil (4000 ohms — 17000 turns #45 wire) fitted with a 30 AT miniature reed will switch 15W with an input of 12V and 3mA (36mW) with an overdrive factor of 70% ($17000 \text{ T} \times 3\text{mA} = 51\text{AT}$). To assist the design engineer with the application of standard COTO REED COILS at inputs other than the typical indicated voltages, all coil parameters are listed for easy computation.

The maximum allowable coil current is determined by the coil wire size and the allowable temperature rise. Three amperes per 1000 cir. mils at room ambient is about the maximum advisable at average duty cycle. It should be kept in mind that square or steep waveform pulses, particularly when accompanied by spikes, will cause operation earlier than rated ampere turn values, since calibration ratings are made by applying slowly increasing voltage until operation occurs.

SPECIAL COTO REED COILS can be supplied to 50000 turns and 15000 ohms or more. Dual and triple concentric windings are available. Bifilar or trifilar wind can provide precisely balanced flux. Coils may be equipped with electrostatic or magnetic shields if adjacent components affect reed operation, or if reed coil flux disturbs other components.

SPECIAL APPLICATIONS: For assistance and quotations on unusual applications, please address Engineering Department giving complete details.

COIL TERMINATIONS: Standard termination is a pair of 3" PVC insulated leads with starting lead color-coded WHITE for polarity. Other terminations include .030 printed circuit pins, solid bare wire, solder lugs and blades to take AMP connector #60503 all silver plated.

RELIABILITY: COTO REED COILS are produced under the highest Q/C standards coupled with nearly a half century of coil winding experience. Reed coils can be furnished to close resistance tolerances, surge tested to specified voltage values, and guaranteed free of shorted turns on special order. Over a half million COTO REED COILS now in service without a reported field failure makes them a logical choice to drive magnetic switches.

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